RESEARCH PAPER

Determinants of Waiting Time for a Routine Family Physician Consultation in Southwestern Ontario

Facteurs déterminants du temps d'attente pour consulter un médecin de famille dans le sud-ouest de l'Ontario

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Abstract

Waiting times are a reality in Canada's publicly financed single-payer healthcare system. While there are ample data about waiting times for specialized investigations and procedures, few data exist about waiting times to see family physicians, and determinants of this wait. We analyzed data from a survey of 731 family physicians in southwestern Ontario to understand physician- and practice-level determinants of waiting time. Physician gender, usual number of patients seen per week, involvement in teaching and population served were the key determinants of physician-reported waiting time.

Résumé

Les temps d'attente sont une réalité du système de soins de santé canadien – un système à payeur unique financé par l'État. Bien qu'il existe amplement de données sur les temps d'attente pour les enquêtes et procédures spécialisées, il en existe peu sur les temps d'attente pour consulter les médecins de famille et sur les facteurs déterminants de ces temps d'attente. Nous avons analysé des données provenant d'une enquête menée auprès de 731 médecins de famille du sud-ouest de l'Ontario afin de comprendre les facteurs déterminants liés aux médecins et à leur pratique et qui influent sur les temps d'attente. Notre recherche démontre que le sexe du médecin, le nombre habituel

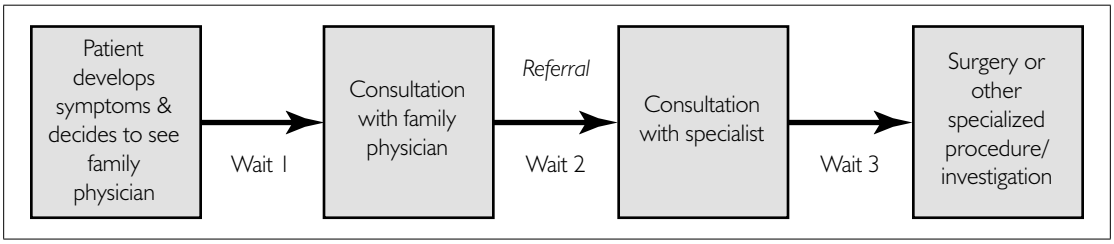
de patients soignés par semaine, les activités d'enseignement et la population desservie sont les principaux facteurs déterminants des temps d'attente.

Waiting times are a reality in Canada's publicly financed single-payer healthcare system. In the past decade, no other issue has crystallized Canadians' concerns about this system more than the perception that we are waiting too long for access to needed healthcare (Sanmartin et al. 2004). The Supreme Court of Canada's recent decision in the case of *Chaoulli v. Quebec (Attorney General)*, which many observers feel has the potential to substantially change the healthcare system, had its genesis in the waiting time for a hip replacement procedure (Makin et al. 2005).

This increasing concern has led to policy initiatives at the federal and provincial levels aimed at reducing waiting times in five key areas (cancer surgery, selected cardiac procedures, cataract surgery, hip and knee joint replacement and MRI/CT scans). For example, the First Ministers' 10-Year Plan to Strengthen Health Care allocated $41 billion to address this issue (Health Canada 2004; Wait Time Alliance 2005); in a similar vein, Ontario has also formulated a province wide plan to reduce waiting times for key areas by December 2006 (Ontario Ministry of Health and Long-Term Care 2006).

Figure 1 presents a simplified linear model of the care path of a prototypical patient. When a patient develops symptoms, the first step in accessing the public healthcare system is typically a consultation with the family physician. The time taken for this consultation with the family physician to occur is depicted as Wait 1 in Figure 1.

FIGURE 1. Model of waiting times



For many conditions that can be fully treated by the family physician, Wait 1 is the only waiting time faced by the patient. However, if the family physician decides to seek specialist consultation or treatment, additional waiting times are involved. The second wait occurs when the family physician sends a referral to the specialist and the patient then waits for a consultation with the specialist (Wait 2), as would occur, for example,

when a family physician refers a patient to an orthopaedic surgeon. Once the patient meets with the specialist, there may be further waits (Wait 3) as the specialist conducts investigations (e.g., CT or MRI scans), reaches a treatment decision and schedules a procedure (e.g., knee replacement surgery) and then finally conducts the procedure.

Literature Review

Waiting time

There is extensive literature documenting waiting times for a specialist consultation (Wait 2) and for specialized investigations/procedures after a specialist consultation (Wait 3). For example, the Alberta Cancer Registry has been used to study the days between definitive diagnosis and treatment initiation (Reed et al. 2004); the Régie de l'assurance maladie du Québec (RAMQ) has been used to estimate waiting time for breast cancer surgery (Mayo et al. 2001); the Oncology Patient Information System (maintained by the Ontario Cancer Treatment and Research Foundation) has been used to study radiotherapy waiting times (Mackillop et al. 1994); and hospital chart abstraction has been undertaken to estimate Coronary Artery Bypass Grafting (CABG) waiting times in Newfoundland and Labrador (Fox et al. 1998). Linked data from provincial administrative databases and joint, cardiac and cancer registries have been used to study waiting times for knee/hip replacement, cancer surgery and cardiac procedures (Bourne et al. 2001; Coyte et al. 1994; DeCoster et al. 1999; Naylor et al. 1995; Nova Scotia Department of Health 1996; Simunovic et al. 2001; Tu et al. 2005).

Information about Wait 2 times comes primarily from surveys of physicians (often specialists), patients, and laboratory, hospital or facility directors. For example, the Health Services Access Survey (HSAS) 2003 indicates that the median waiting time across Canada for specialized services was 4.0 weeks for specialist visits, 4.3 weeks for non-emergency surgery and 3.0 weeks for diagnostic tests (Sanmartin et al. 2004). Another source is the Fraser Institute's annual survey of specialist physicians (Esmail and Walker 2005). Other studies of Wait 2 times include waiting time for cancer surgery (Simunovic et al. 2001), cholecystectomy (Olson and de Gara 2002), cardiology consultation (Massel 1999) and specialist breast cancer care (Olivotto et al. 2000, 2001).

In contrast, there is little evidence about waiting times for a family physician visit or the determinants of this wait (Wait 1). Klein-Geltink et al. (2005) analyzed waiting times for cancer care in children and found that the median time between onset of symptoms to initial healthcare contact (Wait 1) was seven days if the initial contact was with a general practitioner and 11 days if it was with a paediatrician.

Determinants of waiting times

A limited number of studies have attempted to understand the determinants of waiting times, and most focus on patient and physician-/system-level factors. A large study of coronary artery bypass surgery in Ontario found that waiting time for surgery was associated with symptom status and anatomy, with patient age not being a significant determinant (Naylor et al. 1995). Conner-Spady et al. (2005) found a weak correlation between actual waiting time and a priority criteria score (for assessing urgency) among patients undergoing hip or knee arthroplasty. Alter et al. (1999) found that nearly half the variation in waiting times for coronary angiography could be explained by a combination of clinical factors. Arnesen et al. (2002) reported that suspected/verified neoplastic disease or a risk of serious deterioration was a significant predictor of shorter waiting times for inpatient surgery; gender and socio-economic status had no explanatory power in their model.

Other studies have reported systemic factors to be important determinants; for example, admission to county/district hospitals has been associated with shorter waiting time for orthopaedic surgery compared to university/regional hospitals (Lofvendahl et al. 2005). On the other hand, Shen and colleagues' (2003) analysis of waiting times for breast cancer surgery in Quebec found that patient-level factors were more important in explaining variation than physician-/hospital-related factors. In a similar fashion, Klein-Geltink et al. (2005) found that age was a significant determinant of waiting time to initial healthcare contact, with younger children having shorter overall waiting times.

In conclusion, most of the literature focuses on assessing wait times and their determinants after a patient has seen a specialist and is waiting for a specialized investigation or surgery; there is a dearth of studies examining waiting times for initial contact with the healthcare system. Our study analyzes the determinants of waiting time for a routine family physician consultation in southwestern Ontario.

Methods

Research question

What are the physician and practice determinants of waiting time for a routine family physician consultation (Wait 1) in southwestern Ontario?

Study design and data source

Our study involved a cross-sectional analysis of data gathered from family physicians in southwestern Ontario. The data were collected as part of a census of all family

physicians and specialists in the 10 counties surrounding and including London, and investigated a broad range of physician, practice and systemic characteristics. In the fall of 2004, the survey was mailed to 1,044 family physicians in southwestern Ontario using a modified Dillman method (Dillman and Dillman 2000). The initial package, sent by registered mail with recorded delivery, included the survey, an information letter, a $25 gift certificate and a self-addressed stamped envelope. Reminder postcards were sent to all physicians two weeks later. Two additional surveys were mailed to non-responders, the first approximately four weeks after the initial mailing, and the final about four weeks after that (in consideration of statutory holidays). The response rate was 70.0% (n=731).

Variable specification

The dependent variable was waiting time to see a family physician. One question in the survey asked family physicians to report what was the usual patient's wait for an appointment for a non-urgent problem at their office. (Physicians were specifically asked to exclude routine medical examinations in their response to this question.) We dichotomized the responses to less than or equal to five days and more than five days. (The response categories were same day, 1–2 days, 3–5 days, 6–7 days, 1–2 weeks, 3–4 weeks, 5–6 weeks and more than 6 weeks.) The cut-off point was decided based on the distribution of responses, such that an equal number were above or below the cut-off point.

Independent variables were grouped into two levels. Physician-level variables included physician gender, completion of a family medicine residency, involvement in undergraduate or post-graduate teaching and whether the physician was an international medical graduate.

Practice-level characteristics included number of years the physician had practised at the current location, type of practice (solo or group), practice type (i.e., family health network [FHN], family health group [FHG] or community health centre [CHC]/health services organization [HSO]), usual number of patients seen per week (≤100, 101–150, >150) and whether or not the practice was accepting new patients. We assessed the level of interdisciplinary care by summing the types of healthcare providers who shared patient care with the family physician in their practice. The environment of the practice was assessed by the type of population served (urban, suburban or inner city, small town or rural and isolated communities).

Data analysis

Data analysis was carried out using Stata/SE Ver. 9.0 (Statacorp 2005). The unit of analysis was an individual physician. Chi-squared and t-tests were used to evaluate

the relationship between the dependent and independent variables. Since the dependent variable is binary in nature, logistic regression models were utilized to estimate the parameters specified in the model. The overall fit of the model to the data was assessed with the maximum log likelihood ratio χ^2 statistic. Multi-collinearity and interaction effects were evaluated for the model. In order to facilitate discussion, odds ratios for statistically significant variables from the regression model were converted to risk ratios, according to the method suggested by Zhang and Yu (1998).

Results

Descriptive analyses

Table 1 depicts the descriptive characteristics of the variables associated with waiting time. Among the physician-level characteristics, female physicians and those involved in undergraduate or post-graduate teaching were more likely to have a waiting time of more than five days. At the practice level, physicians practising in a group, and those in practices organized as FHG, FHN, CHC or HSO, were more likely to have longer waiting times. Physicians seeing fewer than or equal to 100 patients per week and those serving rural and isolated communities were also more likely to have longer waiting times. No association was found between waiting time and completion of family medicine residency, international medical graduate status, number of years practising at the current location, level of interdisciplinary care or whether or not the practice was accepting new patients.

Multivariate analyses

Table 2 presents the results of the logistic regression model of the determinants of waiting time. Controlling for other variables in the model, we noted statistically significant associations between waiting time and physician gender, usual number of patients seen per week, involvement in undergraduate or post-graduate teaching and the population served. Table 3 presents the significant results in terms of relative risks, as per the method of Zhang and Yu (1998).

Female family physicians were 36% more likely to report a longer waiting time compared to male family physicians. As the usual number of patients seen per week increased, the waiting time decreased – physicians who saw more than 150 patients per week were 36% less likely to report a longer waiting time than physicians who saw 100 or fewer patients per week. Involvement in undergraduate or post-graduate teaching increased the likelihood of reporting a longer waiting time by 52%, while physicians serving small towns were 41% more likely and those serving rural and isolated

TABLE 1. Physician and practice characteristics associated with waiting time

	WAITING TIME		
	≤ 5 DAYS (N=365)	> 5 DAYS (N=290)	χ^2 P VALUE
Family physician characteristics			
Gender			
Male	59%	41%	0.014
Female	48.8%	51.2%	
Completion of family medicine residency			
No	54%	46%	0.33
Yes	57.8%	42.2%	
International medical graduate			
No	63.5%	36.5%	0.11
Yes	54.6%	45.4%	
Involved in UG/PG teaching			
No	76.2%	59%	0.0001
Yes	23.8%	41%	
Practice characteristics			
Years practising at current location	12.8[a]	13.9[a]	0.16
Solo or group practice			
Solo	60.3%	39.7%	0.045
Group	52.4%	47.6%	
Practice organized into FHN, FHG, CHC or HSO			
No	60%	40%	0.005
Yes	48.8%	51.2%	
Level of interdisciplinary care[b]	2.8[a]	3.2[a]	0.12
Usual # of patients seen per week			
≤ 100	43.1%	56.9%	0.0001
101–150	56.3%	43.7%	
> 150	62.2%	32.8%	
Accepting new patients			
No	61.7%	38.3%	0.72
Yes	42%	58%	
Population served			
Urban, suburban or inner city	65.1%	34.9%	0.0001
Small town	50.6%	49.4%	
Rural and isolated communities	44.3%	55.7%	

Note: a denotes the values are means.
b number of types of healthcare providers who share care with the family physician.

TABLE 2. Logistic regression analysis of the determinants of waiting time (n=511)

	ODDS RATIO
Family physician characteristics	
Gender	
Male	—
Female	1.82**
Completion of family medicine residency	
Yes	—
No	1.04
International medical graduate	
Yes	—
No	1.25
Involved in UG/PG teaching	
No	—
Yes	2.22**
Practice characteristics	
Years practising at current location	1.02
Solo or group practice	
Solo	—
Group	0.97
Practice organized into FHN, FHG, CHC or HSO	
No	—
Yes	1.09
Level of interdisciplinary care	1.01
Usual # of patients seen per week	
≤ 100	—
101–150	0.57*
> 150	0.47*
Accepting new patients	
No	—
Yes	1.06
Population served	
Urban, suburban or inner city	—
Small town	1.94*
Rural and isolated communities	1.80*

Note: * $p<0.05$,** $p<0.001$

TABLE 3. Relative risks of significant variables from regression model

VARIABLE	RR
Male family physicians	1
Female family physicians	1.36
Usual # of pts seen per week: ≤ 100	1
Usual # of pts seen per week: 101–150	0.71
Usual # of pts seen per week: > 150	0.64
Involved in teaching: No	1
Involved in teaching: Yes	1.52
Population served: Urban, suburban or inner city	1
Population served: Small town	1.41
Population served: Rural and isolated communities	1.36

Note: RR = OR/(1-P_0) + (P_0 x OR), where
RR = Risk Ratio
OR = Odds Ratio
P_0 = incidence of outcome of interest in non-exposed group (coded as 0)

communities were 36% more likely to report a longer waiting time than family physicians serving urban or suburban communities.

Discussion

It is no surprise that physicians who report being involved in teaching activities have a longer waiting time. Teaching is a time intensive endeavour and takes up a significant amount of work time for physicians. Teaching medical students and residents involves not only setting aside time for didactic activities, but also budgeting extra time during the patient encounter, thus reducing the total time available per day for scheduling appointments.

Data from the 2004 National Physician Survey (NPS) indicate that female family physicians exhibit a different practice pattern than male family physicians. The NPS 2004 data suggest that compared to male physicians, female physicians see fewer patients per week (National Physician Survey 2004c), work fewer average weekly hours in direct patient care (National Physician Survey 2004a) and report more days away from work for personal reasons (National Physician Survey 2004d). In addition, a smaller percentage of female family physicians (15.6%) report that their practice is open to all new patients, compared to male family physicians (23.8%) (National Physician Survey 2004b). Other evidence suggests that female physicians are more

likely to practise clinical medicine on a part-time basis (Janes et al. 2004; McMurray et al. 2005). It is thus not surprising that female family physicians in our study have a greater likelihood of reporting longer waiting times.

The usual number of patients seen exhibits a linear trend, with family physicians seeing more than 150 patients per week being the least likely to report longer waiting times. This variable may be an approximate proxy for full-time/part-time status, and given the limited number of days available to part-time practitioners for scheduling appointments, they might be expected to have longer waiting times.

Of concern was the finding that physicians in rural and isolated communities and small towns reported longer waiting times than those in urban areas. This indicates a possible access problem facing much of rural and small-town southwestern Ontario. From a policy perspective, this finding is one that is amenable to intervention, but given the difficulty of recruiting new physicians to the area, there is no ready panacea. One step that has recently been implemented in response to this issue has been to increase the size of family medicine residency programs in the regional medical schools; however, the payoff of this initiative is at least three years in the future, and even that is contingent on the few additional graduates deciding to stay and practise in rural southwestern Ontario.

It is also instructive to examine the factors that were not significant determinants of waiting time. One would expect that practices organized as groups, or as family health networks, or those having a high level of interdisciplinary care, would perhaps be more efficient or have more staff support for patient care, and thus shorter waiting times. Our study showed no such impact of these factors. One interpretation may be that since some of these initiatives are in the early stage of development, we are not yet picking up their impact. Another possible explanation is that while wait times to see family physicians may not have improved, they could have improved for other members of the team (such as nurses), thus improving overall patient access.

A few caveats should be borne in mind pertaining to our analyses. We did not have data that would have enabled us to control for practice size. A more serious limitation is that the dependent variable (waiting time) was self-reported by the physician, and is thus not the true waiting time faced by the patient. Instead, it is the family physicians' estimate of what they think the waiting time is for their practice. There is no literature describing the validity of family physicians' recall of such waiting times. The Fraser Institute's latest report assesses the comparability of its specialist survey and waiting times reported from provincial databases (Esmail and Walker 2005), but different methodologies and wait time definitions preclude any conclusions that could be applied to the primary care arena. Further research using patient interviews is needed to corroborate family physicians' estimates of waiting times.

In conclusion, our research demonstrates that physician gender, usual number

of patients seen per week, involvement in teaching and population served are the key determinants of physician-reported waiting time to see a family physician. Further research is needed before these results can be generalized beyond southwestern Ontario.

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